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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/522,023	01/21/2005	Akira Kuramori	ION2.013APC	1949

20995 7590 07/30/2007
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EXAMINER

PANI, JOHN

ART UNIT	PAPER NUMBER
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3736

NOTIFICATION DATE	DELIVERY MODE
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07/30/2007

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 10/522,023	Applicant(s) KURAMORI ET AL.	
	Examiner John Pani	Art Unit 3709	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 April 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 January 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>1/21/2005 and 4/20/2005</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities:
2. Page 22, line 20-21 states that "in the case of turning to the right... Fig. 4(c) is generally selected as the synchronous contraction waveform", however, pg. 20, lines 12-16 state that "the smaller one of the two values of the time-series waveforms at the same time...is designated as the signal value of the synchronous waveform." It is suggested to replace "FIG. 4(c)" on pg. 22 line 21 with –FIG. 4(b)—, and further, to replace "FIG. 4(b)" on pg. 22 line 23 with –FIG. 4(c)–.
3. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Appropriate correction is required.

Claim Objections

4. Claims 3 and 10 are objected to because of the following informalities:

5. In reference to Claim 3

In line 3, "the smaller one" lacks antecedent basis in the claims. It is suggested to replace with –a smaller one--. In line 4, "the same time" lacks antecedent basis in the claims. It is suggested to replace with –a same time--.

In reference to Claim 10

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In line 4, "the smaller one" lacks antecedent basis in the claims. It is suggested to replace with --a smaller one--. In line 4, "the same time" lacks antecedent basis in the claims. It is suggested to replace with --a same time--. Appropriate correction is required.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 3, 4, 10, and 11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 3 and 10 require "designat(ing) the smaller one of respective values at the same time of the time-series waveforms of the pair of myoelectric potentials... as a signal value of the synchronous contraction waveform". It is unclear based on the specification (see pg. 20 and 22) whether the synchronous contraction waveform is a composite waveform in which each value at a given time is chosen from the lower of the pair of myoelectric potentials, or whether the synchronous contraction waveform is chosen to be the waveform (either left, or right for example) that has the lower value during a particular turn.

NOTE: For purposes of rejections of claims 3, 4, 10, and 11 on prior art, it has been assumed that the synchronous contraction waveform is chosen to be the waveform that has the lower value during a particular turn.

Double Patenting

8. Claims 1, 2, and 7 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 3 of copending Application No. 10/942,045. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims of the instant application are anticipated by the claims of the copending application. Claims 1, 2, and 7 of the instant application are generic to the species claimed in claim 3 of potentially conflicting copending Application No. 10/942,045.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 1-3, 5-10, and 12-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP2002-230699 to Okamoto et al. (Okamoto) in view of JP2003-177079 to Masaru et al. (Masaru).

11. In reference to Claims 1 and 8

Okamoto (see attached translation) teaches an apparatus and method for evaluating a degree of work comfort ("driving load decision device") by measuring myoelectric potentials during a work activity which is performed antagonistically (steering a vehicle) by a pair of left and right muscles provided in a human body in bilaterally symmetrical relation ("same muscle of left and right arms", see [0006]) comprising: a pair of detection sensors (myoelectric potential sensors 2, see [0022] and Figs. 1-2) for detecting the myoelectric potentials produced by actions of the pair of left and right muscles provided in the human body in bilaterally symmetrical relation ([0022]) during the work activity; a waveform processing unit (the steps of the disclosed method are carried out by a computer, see [0155]) for generating a synchronous contraction waveform of the pair of muscles from time-series waveforms of the pair of myoelectric potentials (see [0035], "Mn" is calculated. Although all examples show competitive values of biceps/triceps, i.e. "muscles for expanding and contracting arm", it is clear from [0022] that the same muscle of two sides of the body can also be used); and an evaluation unit (the steps of the disclosed method are carried out by a computer, see [0155]) for evaluating a level of the degree of comfort of the work activity from intensity information of the generated synchronous contraction waveform (The strength of the signal is compared to a reference value, see [0039]). However, Okamoto does not explicitly state that an amplifier is used to amplify the myoelectric potentials.

Masaru teaches of an apparatus for measuring feeling of steering that detects muscles potential and uses an amplifier (**15L and 15R**) to amplify the electromyogram wave (see [0026] of attached translation).

It would have been obvious to one having ordinary skill in the art at the time of the invention to have included an amplifier as taught by Masaru, in the device taught by Okamoto, so that the weak EMG signal could be amplified.

In reference to Claims 2 and 9

Okamoto in view of Masaru teaches an apparatus and method of claims 1 and 8 (see above), and Okamoto further teaches that the evaluation unit calculates the intensity information of the generated synchronous contraction waveform ([0035]) and evaluates the level of the degree of comfort of the work activity ([0039]) at the specified time interval (the time during which measurements are taken is a "specified time interval") based on results of the calculation.

In reference to Claims 3 and 10

Okamoto in view of Masaru teaches an apparatus and method of claims 1-2 and claims 8-9 (see above), and Okamoto further teaches that the waveform processing unit performs full-wave rectification with respect to the time-series waveforms of the pair of myoelectric signals (uses "absolute values", see [0022]). However, Okamoto does not teach that the smaller of the respective values at the same time of the time-series waveforms of the pair of myoelectric potentials are designated as a signal value of the synchronous contraction waveform.

Masaru teaches that a waveform processing unit performs full-wave rectification with respect to the time series waveform of a pair of myoelectric potentials (see [0040-0045] and drawing 6, all values are greater than zero), and designates that both the larger and smaller of the waveforms are used individually to determine passive or active

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steering [0045]. This corresponds to designating them as a signal value of the synchronous waveform, as they are used to determine the comfort of the work activity (i.e. passive/active steering).

It would have been obvious to one having ordinary skill in the art at the time of the invention to have modified the apparatus and method taught by Okamoto by using both the larger and smaller of two corresponding waveforms to determine passive or active steering, as taught by Masaru, because it would allow for greater accuracy in determining driver stress, because two inputs would be used to judge the driver's condition (see [0045] of Masaru).

In reference to Claims 5 and 12

Okamoto in view of Masaru teaches an apparatus and method of claims 1-2 and claims 8-9 (see above), and Okamoto further performs full-wave rectification with respect to the time-series waveforms of the pair of myoelectric potentials ("absolute values" [0022]) and designates a geometric mean value of signal values at the same time of the time-series waveforms of the pair of myoelectric potentials as a signal value of the synchronous waveform (the product of myoelectric potentials equates to a geometric mean).

In reference to Claims 6 and 13

Okamoto in view of Masaru teaches an apparatus and method of claims 1-2 and claims 8-9 (see above), and further teach that the work activity comprises steering a wheel in driving a vehicle ("driving load" during driving is measured using myoelectric potentials from the arms).

In reference to claims 7 and 14

Okamoto in view of Masaru teaches an apparatus and method of claims 1-2 and claims 8-9 (see above). Okamoto discloses sensors attached to the biceps and triceps but not the deltoids. Masaru teaches that the deltoids are useful in determining whether a driver is in an "active state" or "passive condition" ([0045]). The active or passive state of the driver would be an indicator of "driving load". It would have been obvious to one having ordinary skill in the art at the time of the invention to have modified the invention taught by Okamoto by measuring myoelectric potential from the deltoid muscles, as taught by Masaru to determine whether the driver was in an active or passive state.

12. Claims 4 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okamoto in view of Masaru as applied to claims 3 and 10, respectively above, and further in view of "The importance of normalization in the interpretation of surface electromyography: a proof of principle" to Lehman et al. (Lehman).

13. Okamoto in view of Masaru teaches an apparatus and method for evaluating degree of work comfort according to claims 3 and 10 (see above), however neither reference explicitly mentions that the waveform processing unit performs a normalizing process with respect to the time-series waveforms of the pair of amplified myoelectric potentials by using a maximum myoelectric potential prior to generating the synchronous contraction waveform.

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Lehman teaches that EMG recordings are highly variable and depend upon electrode application and placement, perspiration and temperature, muscle fatigue, contraction velocity and muscle length, cross talk from nearby muscles, activity in other synergists and antagonists, etc (pg. 445, second paragraph). Lehman further teaches that it is typical to normalize EMG by the value recorded during a maximum voluntary contraction (pg. 445 first paragraph) to control for variables and allow comparison between subjects or days.

It would have been obvious to one having ordinary skill in the art at the time of the invention to have modified the device and method taught by Okamoto by normalizing the myoelectric potential data using the maximum value in order to control for variables and allow comparison between subjects and days, as taught by Lehman.

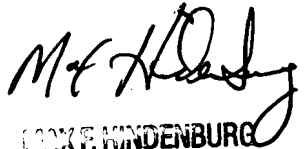
Any inquiry concerning this communication or earlier communications from the examiner should be directed to John Pani whose telephone number is 571-270-1996. The examiner can normally be reached on Monday-Friday 7:30 am - 5:00 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Max Hindenburg can be reached on 571-272-4726. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JP 7/3/07


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